

GFO-17-503

Addressing Barriers to Wider Adoption of Near-Zero Emission Natural Gas Vehicles



Pre-Application Workshop: October 11, 2017

Pre-Application Questions, Answers, and Clarifications

**State of California
California Energy Commission**
<http://www.energy.ca.gov/contracts/index.html>

- 1. Q: After signing up for the WebEx, were we supposed to get the slides and attendees list?**

A: The Pre-Application Workshop slides, attendees list, and recording have been posted and are available here: <http://www.energy.ca.gov/contracts/pier.html>

- 2. Q: Is there an email list we need to join to automatically get information on this grant?**

A: Yes, to get notified of any changes or addenda to the solicitation, you can subscribe to the Energy Commission's OPPORTUNITY list server by going to <http://www.energy.ca.gov/contracts> and entering your information in the Subscribe box in the right-hand column. Doing so will allow you to receive email notifications when solicitations are posted or updated.

- 3. Q: For Group 1, does an end user for the technology demonstration need to be identified as part of the proposal?**

A: There is no requirement to include the end user, but identifying the end user could strengthen a proposal and help describe how the project's demonstration efforts will lead to commercial products and ratepayer benefits.

- 4. Q: For Group 1, will hybrid technologies other than electric hybrids be considered? Why?**

A: No, Group 1 focuses on hybrid-electric technologies only. The research topic builds off of previously funded efforts. Non-electric hybrid technologies may be considered in future funding opportunities.

- 5. Q: For Group 2, if the recipient performs single-cylinder engine exploratory research on advanced combustion concepts, do the experiments have to be performed on a single-cylinder equivalent of a 16-liter engine or is a single-cylinder equivalent of a 15-liter engine acceptable (e.g., a 2.44-liter single cylinder engine)?**

A: As stated on page 18 of the Solicitation Manual in Section II. Project Requirements, cylinders (single) should have equivalent bore and stroke sizes to a representative engine with a displacement greater than 16-liters. Therefore, single cylinder testing on a 15-liter engine equivalent would not be eligible under the requirements for Group 2.

- 6. Q: For Group 2, are there any expectations on the minimum natural gas substitution levels in dual fuel concepts?**

A: There is no minimum requirement for natural gas substitution levels in dual fuel concepts. However, a technology that uses higher rates of natural gas substitution could have greater greenhouse gas and air quality benefits resulting in a stronger proposal.

7. Q: For Group 2, would improvements on combustion technology concepts evaluated in the last decade be eligible?

A: Yes, if a combustion technology has been previously evaluated but has not been able to reach commercialization, a project aiming to improve the technology's commercial viability and potential benefits while meeting all other technical requirements specified for Group 2 would be eligible.

8. Q: For Group 2, would an R&D project based on a 9-liter, 6-cylinder natural gas engine provided by a foreign partner who has done single cylinder testing be eligible?

A: Group 2 requires testing to be done on a large displacement engine (greater than 16-liters) or equivalently sized single cylinder system. Testing on a 9-liter engine will not be eligible.

9. Q: What percentage of funding would need to be spent in California to get the California entity points?

A: There are two independent Scoring Criteria that evaluate funds spent in California and funds allocated to a California Based Entity (CBE). Requirements for acquiring points in these Scoring Criteria are detailed in Section IV.F.

Scoring Criterion 6 includes a table on Page 37 of the Solicitation Manual that shows that a minimum of 60 percent of funds spent in California would provide 20 percent of the weighted score. The percentage of possible points for this criterion is graduated based on the percentage of funds spent in California and as shown in the table. To qualify for points under Criterion 6, the proposal must score a minimum of 49 points for Criteria 1 through 4.

To receive preference points under Criterion 10 for California Based Entities (CBEs), a minimum of 60 percent of the requested Natural Gas R&D funds must be allocated to the CBE. Scoring Criterion 10 includes a table on Page 39 of the Solicitation Manual that shows that a minimum of 60 percent of funds allocated to CBEs would provide 20 percent of the weighted score. The percentage of possible points for this criterion is graduated based on the percentage of CEC funds allocated to CBEs. To qualify for preference points under Criterion 10, the proposal must achieve the minimum passing scores for Criteria 1 through 4, and 1 through 7.

10. Q: Larger engines pose research needs and may be less efficient; can the Energy Commission supply literature citations that outline these problems?

A: The Energy Commission published the 2015 Natural Gas Vehicle Research Roadmap (<http://www.energy.ca.gov/2015publications/CEC-500-2015-091/CEC-500-2015-091-CMF.pdf>), which details research gaps and opportunities related to natural gas vehicles. The roadmap includes a section on high-horsepower applications, but it mainly focuses on on-road vehicles. Applicants are expected to identify and respond to a problem

statement and perform their own literature review to support the proposed project's technical merit and need.

11. Q: For Group 2, a single-cylinder test fixture for a large engine with all of its support equipment could cost more than the allocated funding. With a good test plan and prior development and simulation, can single-cylinder testing be skipped and multi-cylinder engine testing be the primary development path?

A: Yes, multi-cylinder testing may be conducted instead if sufficient prior testing, development, and validation of the technology have been completed. Applicants should provide details of their test plan and prior development efforts in the Project Narrative (Attachment 4) and Scope of Work (Attachment 6). The applicant should consider whether the prior development efforts were aimed at and are relevant to the low emissions focus of this solicitation.

12. Q: For Group 2, will projects that include an in-service demonstration gain additional scoring benefits?

A: If sufficient testing and validation of the combustion technology has been completed at the engine level, an in-service demonstration may be eligible under Group 2. Applicants should provide details supporting their chosen level of testing and demonstration of the proposed technology and provide information on how their project will lead to commercial products and ratepayer benefits. If a proposal includes an in-service demonstration that could better accelerate the technology's path to commercialization, then the proposal may receive higher consideration during scoring.

13. Q: For Group 2, is it mandatory for the engine to be able to revert to diesel operation when needed?

A: No, full diesel operation capability is not a requirement for Group 2. Dual-fuel technologies that can maintain full diesel capability may have higher chances for commercialization due to industry needs for interoperability. If a proposal for a dual-fuel technology meets all other technical requirements of Group 2 and maintains full diesel capability to accelerate the technology's path to commercialization, then the proposal may receive higher consideration during scoring.

14. Q: Would the CEC consider funding multiple high horsepower on and off highway and stationary certifications to verify the capabilities of natural gas and diesel dual fuel heavy duty engines?

A: No, Group 2 is limited to combustion research on large off-road engines for transportation applications. Stationary and on-road engine applications are not eligible. Engine certification testing is not eligible for funding because it does not qualify as research and development. However, proposals for technologies that require formal verification and/or certification to reach commercial status must include a plan for acquiring the pertinent verification and/or certification.

15. Q: With respect to the CEQA requirements, the term “project” and what constitutes a project in the context of this GFO are vague. The development of NGV technology and its testing and demonstration should not require CEQA. The development and testing would be done in existing offices and laboratories already equipped to do the work. And, any field demonstration of a single vehicle (not requiring any new infrastructure) that may result from this development would have minimal impact on the environment and, what impact it would have would be, by definition, an improvement in air quality. Please provide guidance on how best address CEQA for this subject GFO.

A: Please review Section I.D in the solicitation manual. The Energy Commission requires CEQA-related information (provided in the proposal through the CEQA Compliance Form (Attachment 8)) from applicants to complete its CEQA review. If a project will have minimal impact on the environment, such as development and testing work in existing laboratories and single vehicle demonstrations, the project may fall under a statutory or categorical exemption.

16. Q: Can the CEC provide guidance on how best to quantify the potential benefits of what is primarily a development program, one that tests at most one vehicle for a limited period of time? Without such guidance, the CEC is bound to receive responses using multiple methodologies and assumptions and thus, resulting in comparisons of apples and oranges. Specific questions include:

- **Q: Are the benefits to be quantified for the limited development and demonstration project? Or are they to be extrapolated to all of California?**

A: Applicants are expected to extrapolate benefits to California based on the technology’s commercialization path and expected market penetration. The scoring criterion requires applicants to state the timeframe, assumptions, and calculations for the estimated benefits of their project and explain the reasonableness of their estimation.

- **Q: Is it sufficient to quantify “benefits per vehicle”? This might be the easiest way for the CEC to compare apples to apples and take out the guessing and likely exaggeration of extrapolating to an undefined market size.**

A: The scoring criterion states that impacted market segments in California, including size and penetration or deployment rates, must be identified along with underlying assumptions. A “benefits per vehicle” calculation would be helpful to quantify extrapolated benefits, but applicants are also expected to make reasonable estimations based on a specific market segment and deployment scenario.

- **Q: What methodology should be used to quantify benefits? GREET, AFLEET, etc.? Since this is intended to be an objective criterion, the CEC should be consistent with methodologies used to ensure apples to apples comparisons among the proposals.**

A: The methodology used to calculate benefits must be clearly detailed in the proposal, including the timeframe and assumptions made. GREET and AFLEET are examples of appropriate and reputable models/tools that can be used to calculate potential benefits.

- 17. Q: In the solicitation, it is stated that disadvantaged community points would only be awarded in Group 1. If a program does an in-service demonstration for Group 2 in a disadvantaged area, why not allow the same scoring credit for disadvantaged communities as awarded to Group 1?**

A: Group 2 was intended to focus on combustion research on the engine level. Therefore, Group 2 projects are not eligible to receive Disadvantaged Community preference points. However, if a proposal includes an in-service demonstration in addition to engine level research, it could better accelerate the technology's path to commercialization, and as a result, it may receive higher consideration during scoring. If a proposal includes an in-service demonstration of the technology that will take place in a disadvantaged community and justifies how the project benefits disadvantaged communities, then the proposal could receive greater consideration under the Impacts and Benefits to California NG IOU Ratepayers criterion as an additional qualitative benefit.